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ABSTRACT

This paper describes a collaborative action research effort designed to investigate: whether teachers would be able to predetermine their dominant learning and teaching styles; whether teachers' dominant learning and teaching styles would be similar; whether teachers of differing levels or subjects would be concentrated in any one dominant learning or teaching style; and whether teachers would recognize the importance of teaching to students' different learning styles. School district staff were invited to a two-evening inservice on teaching and learning styles. Participants completed questionnaires in which they described their own teaching and learning styles. They also completed course evaluations and post-course surveys assessing their understanding of information taught in the course. Most participants had no trouble picking out their teaching styles. Through the course, teachers discovered what their learning styles were and how they differed from what they thought they were. Some teachers who were very strong learners in one category differed in teaching style dominance. There was no significant trend toward any particular learning style based on grade level taught. Participants realized the importance of teaching and learning styles to the performance of their students. (SM)

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ED 446 053

Collaborative Action Research Report

Learning and Teaching Styles

Submitted by: Dennis M. Adams

My name is Dennis M. Adams. I am the Chair of the Foreign Language Department at Kemmerer High School located in Kemmerer, Wyoming and the author of this collaborative research project. Kemmerer is located in the southwest corner of Wyoming. Our school district serves approximately 1100 students with around 100 teachers and staff. Lincoln County School District #1 is dedicated to creating an atmosphere where students can become responsible citizens and lifelong learners through quality education. Our economic base is mining, ranching, electric power production, and natural gas. We are a 75% blue collar community with the school system being the third largest employer. Our ethnic composition is 80% white, 12% Hispanic, 5% Asian, 3% other.

Since beginning my Master of Arts in Teaching, I have had a keen interest in my own learning and teaching styles and have learned the importance of those styles in reaching all students in the classroom setting. With that in mind, I wanted to give all teachers interested the opportunity to gain the understanding about these styles that has helped me in my classroom. I also wanted to know how these styles related to other and if the teachers were able to recognize their own learning and teaching styles. I also wanted the teachers to have the base to be able to recognize the learning styles of their students and to help them realize their strengths and weaknesses in learning. By becoming

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D. M. Adams

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more aware that there is a diversity of leaning styles in our classrooms, we will be better prepared to reach all students and not just those of our own teaching styles.

Problem Statement

Collaborative Research Problem Statement

Submitted by: Dennis M. Adams

In Lincoln County School District #1 located in Kemmerer, Wyoming, there is a need to understand that each teacher has their own learning and teaching styles. Some teachers are already familiar with and can recognize their own particular style while others have more difficulty with the recognition.

Furthermore, it is essential to recognize and consider that these teachers face classrooms full of students with a large diversity of learning styles, many of which differ from that of their own.

With such diversity of learning styles, these teachers are unaware that the very methods being used in the presentation of the lesson may be the reasons for discipline problems, lower test scores, lack of motivation, unachieved curriculum criteria standards, and other unwanted classroom behaviors.

Therefore, we will attempt to enable all teachers in the school district to become familiar with their own learning and teaching styles. In addition, recognition of individual student learning styles will be discussed along with methods to teach lessons involving all styles. Once learned, these teachers will be empowered to better prepare themselves to teach and reach all students in their classrooms by recognizing the importance of teaching to <u>all</u> learning styles.

Research Questions:

1.) Will the teachers be able to pre-determine their dominate learning and teaching styles?

2.) Will the teacher's dominate learning and teaching style be similar?

3.) Will the teachers of differing levels or subjects be concentrated in any one dominate learning or teaching style?

4.) Will the teachers recognize the importance of teaching to the different learning styles in their classrooms?

Methods of Research

The plans for a two evening inservice on learning and teaching styles was first set up through the school district administration. This inservice was to be given for Professional Development credit and was open to all interested district staff members. Before the inservice was presented, all participants were given the Pre-Inservice Questionnaire. This questionnaire gave all participants the opportunity to choose from four paragraphs describing the four different learning styles based on the theory of Carl Gustav Jung. They were asked to choose which of the four paragraphs best described their own teaching style. During the inservice, each of the 20 participants were given the Learning Style Inventory and Teaching Style Inventory developed and distributed by Silver Strong & Associates, Inc. These inventories are a self-diagnostic tool to use in identifying learning and teaching styles based on Dr. Jung's Theory of Psychological Types. At the conclusion of the inservice, each participant was asked to fill out two evaluations as to what was gained from the instruction and activities. One week after the inservice, each participant was contacted by phone and given the Post-Inservice Phone Survey to assess the overall understanding and importance

that each participant gave to the information learned from the inservice. The main idea of the survey was to get the teachers feelings about the importance of incorporating the learning and teaching style theory into their own classroom.

Research Findings--Collected Data

The following chart is the overall statistical information collected from the Pre-Inservice Questionnaires and the Learning and Teaching Style Inventories, as well as years taught and subjects/grade taught. These would be Research Tools #1, #2, and #3.

This chart will be on the following page.

Statistical Analysis for Action Research Project of M.A.T

Subject: Learning and Teaching Styles

Table 1

Name	Pre-Inservice Quest.	Dominate L.S.	Dominate T.S.	Years Teaching	Grade Taught
V. Slotte	ST	102--ST	64--ST	29	Librarian-HS
J. Erdahl	ST	76--ST	73--ST	14	Gen Bus.-HS
C. Yantzi	ST	74--NT	69--NT	17	Science--HS
K. Heigh	NT	74--ST	45--SF	29	Math--HS
K Beatty	SF	72--NF	48--SF	16	English--HS
D. Bullington	ST	78--ST	60--ST	9	Weld, Auto
Z. Hopkins	ST	63--NT	43--ST	27	History-HS
D. Adams	ST	79--ST	61--ST	27	Spanish--HS
R. Davis	SF	86--SF	47--ST	25	Biology--HS
M. Podlesnik	SF	86---ST	59--ST	N/A	School Nurse
E. Barnes	SF	68--NT	58--SF	13	English--HS
K. Hinton	NT	104--NT	80--NT	25	English--HS
S. Davis	ST	81--ST	45--NT	26	Engish--MS
B. Dion	NF	93--NF	75--NF	6	Art--MS
D Hunzie	SF	62--SF	64--SF	1	Elem--2nd
L.Murray	SF	51--SF	50--SF	30	Elem--3rd
J. Smith	ST	71--ST	49--ST	4	Principal
A. Wainwright	SF	70--ST	48--SF	40	Elem--5th
D. Mickelson	ST	53--ST	60--ST	23	Science MS
D. Duff	SF	51--ST	49--SF	4	Music--MS

The findings from the Pre-Inservice Questionnaire were quite interesting in that most of the participant staff members did not have difficulty in picking the paragraph that best suited them as to their own teaching styles. The following chart is the information that was compiled from the questionnaires. This is Research Tool #1.

Table 2

Teaching Styles	Number	Percentage
Sensing/Thinking (ST)	9	45%
Sensing/Feeling (SF)	7	35%
Intuitive/Feeling (NF)	2	10%
Intuitive/Thinking (NT)	2	10%

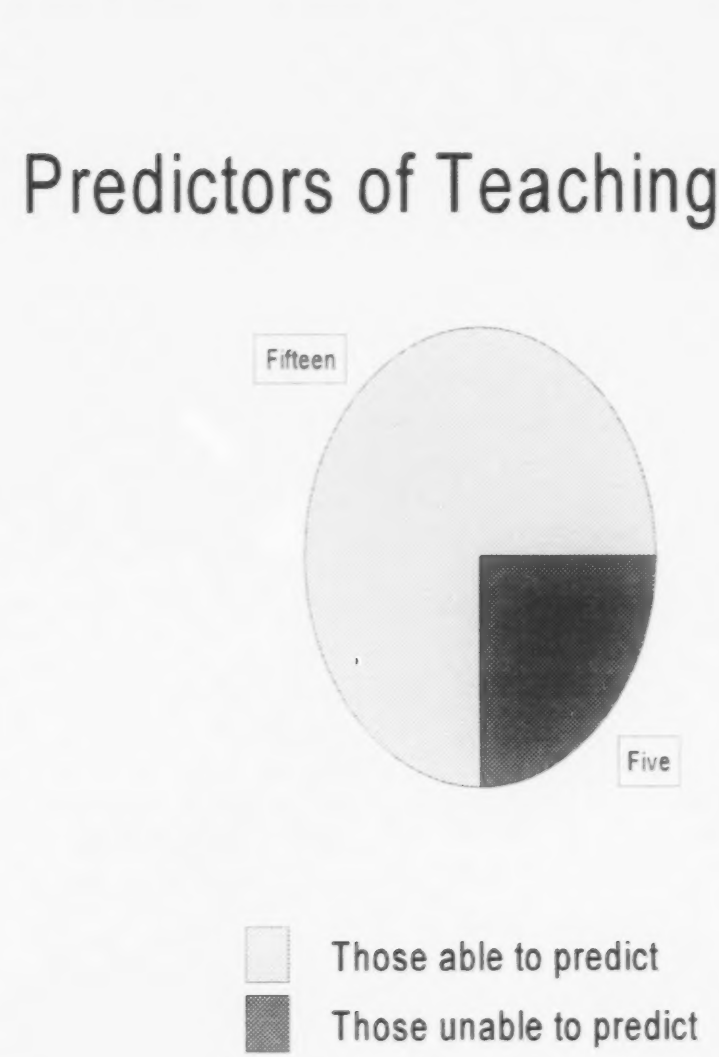
In this particular group, it is interesting to note that there were 11 high school teachers, 7 middle school and elementary teachers and, 2 administrators. According to Dr. Robert Hanson, the breakdown of percentages in any one group should be 35% ST, 35% SF, 20% NT, and 10% NF. The breakdown for our group was strongly in favor of the Sensing Thinkers.

The data gained from the inventories given was quite interesting also. The following is the overall groupings from the participants. This is Research Tool #2 & #3:

Table 3

Learning/Teaching Styles	Dominate L.S.	%	Dominate T.S.	%
Sensing/Thinking	11	55%	9	45%
Sensing/Feeling	3	15%	7	35%
Intuitive/Thinking	4	20%	3	15%
Intuitive/Feeling	2	10%	1	5%

The following is the graph of the overall number of teachers who were able to correctly choose their own teaching style from the Pre-Inservice Questionnaire and the inventories given. This is taken from Research Tools #1, #2 and #3.



The following are the list of comments from the evaluation forms given at the end of the two evening inservice on Learning and Teaching Styles. This is Research Tool #5.

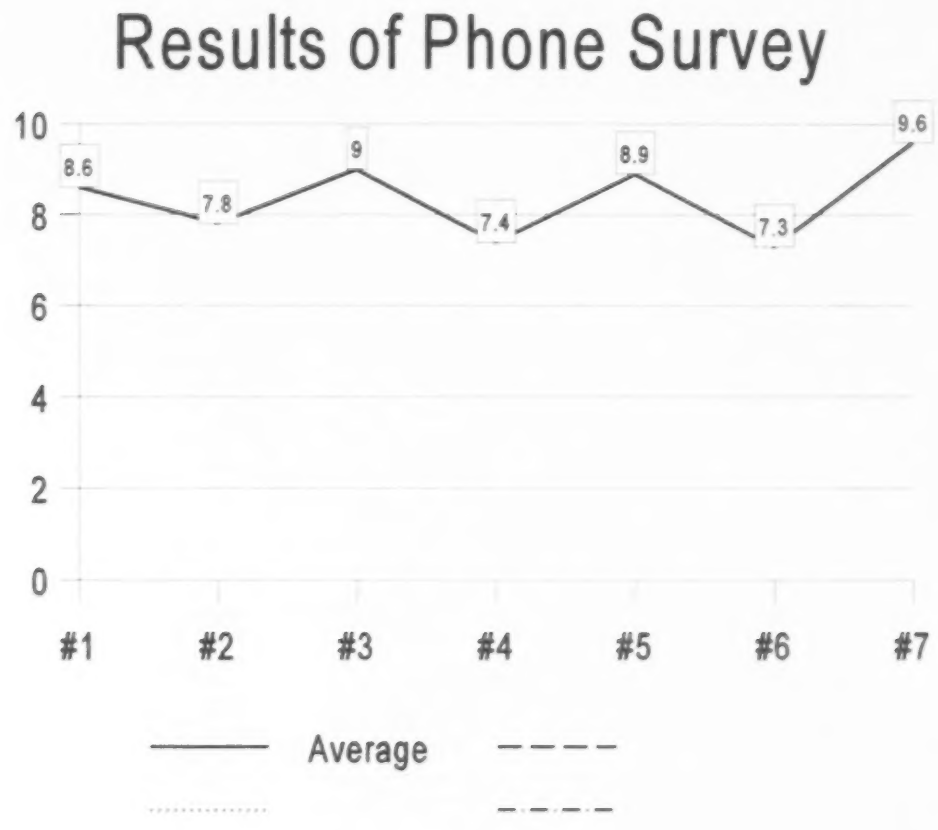
1.) Practicality of information is excellent
2.) Interesting
3.) I do plan to use what I have learned in this inservice
4.) All students will be affected by this.
5.) Practicality is excellent
6.) This workshop was excellent---am going to incorporate in my classes
7.) I will use this information to improve my teaching
8.) Excellent practicality
9.) This program has created enthusiasm and interest
10.) Will improve teaching by making a concerted effort to modify teaching style.
11.) Practicality is excellent
12.) All students will benefit from this research
13.) I give this information a "10"
14.) Interesting to compare to multiple intelligences
15.) Plan to provide media and materials for varied learning styles
16.) Practicality very good
17.) This material is of great value to myself and my students.
18.) This makes me excited for next year
19.) Very interesting and enlightening.
20.) The program content was worthwhile to me.
21.) I want to know more!
22.) This will make me a better teacher
23.) Will help me to teach better
24.) We need this information next fall!
25.) Needed by ALL staff, including the administrators!

There were no negative comments on any of the evaluations. On a rating scale as follows:

Rating Scale	**1**	**2**	**3**	**4**	**5**
	Poor		Fair		Excellent

The overall average for the inservice as rated by the participants was **4.75**. This was based on the overall value of what was learned and the level of active group participation.

The following is the chart showing the overall results of the Learning and Teaching Styles Post-Inservice Phone Survey. This is from Research Tool #4:



The horizontal axis on the above graph represents the questions on the Phone Survey and vertical axis represents the score for each question from 1 to 10. The small boxes represent the average of all the surveys on that particular question.

The final source of data that will be used is from the explanations to Questions #6 and #7 on the Phone Survey. This is from Research Tool #4.

From Question #6:

1.) It is very important for each student to know how they learn.
2.) If the students know how they learn, they will be better prepared to monitor their own learning.
3.) Understanding learning styles will help them know how they think.
4.) It will give them answers to questions that they don't understand.
5.) I just feel that it is important.
6.) I really don't know.
7.) I can't explain it.
8.) I think every teacher should be able to do this without much problem.
9.) If they are aware of how they solve problems, more problems will be solved correctly.
10.) They will get more answers correctly.
11.) I really think it will help and I am excited about it.

From Question #7

1.) We need the parents support with any new program.
2.) If they buy into it, it will be much easier to sell to the students.
3.) Parents are the most influential people in our young people's lives.
4.) We are sunk without it.
5.) The more support the better.
6.) Can't do it without their support.
7.) Parents want to be a part of their child's education.
8.) They will bend over backwards to help.
9.) It will be of great help to you if you have trouble with the student one day.
10.) That is the key!

Data Interpretation

One of the most important benefits that has come from this collaborative research project has been to see the teachers get excited about learning more of their own learning and teaching styles. It has been exciting to see the reactions from the various teachers as they find out what their learning style was and if it differed from what they thought that it would be from the Pre-Inservice Questionnaire. According to the data collected, and from the graph on page 7 of this section, 75% of those participants were able to successfully predict their own teaching styles.

It is interesting to note that some of the teachers who were very strong learners in one category, differed in teaching style dominance. According to **Table 1** on page 5, the majority of the teachers in this category were those who were teaching Math or Science.

This leads us to the answer for Research Question #1: Will the teachers be able to pre-determine their dominate learning and teaching styles? The answer to this question would be that the majority of the teachers were able to predict their dominate teaching style. This area was being statistically tested. To find out the answer to whether or not the learning styles are also the same leads us into the answer to Research Question #2.

During the two evening inservice that I had the privilege of conducting, all participants were given the opportunity to take a self-directed inventory to help determine what learning and teaching styles were dominate. We not only worked with dominate styles but also were able to see auxiliary, tertiary and inferior styles as

Data Interpretation (Cont)

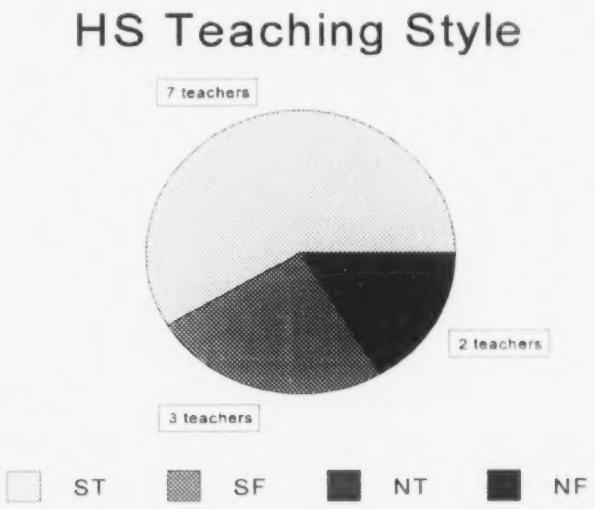
well. I had each group of participants take turns coming up to the white board in in the front of the room and plotting in their individual profiles on the visual presentation graph of their own learning and teaching style.

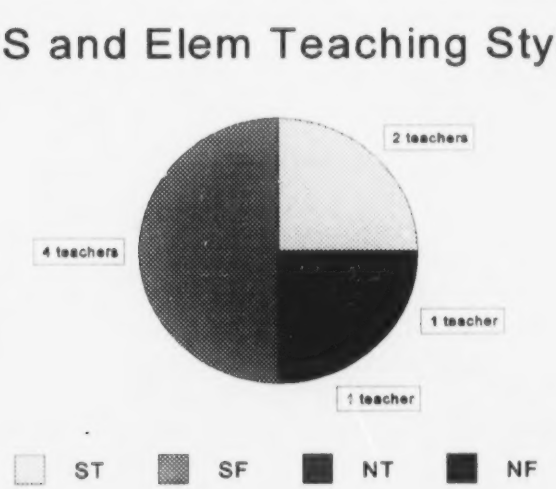
By using the visual presentation graphs, each participant was able to see how their individual dominate learning styles coincided with their teaching style. In answering Research Question #2: Will the teacher's dominate learning style and teaching style be similar?, according to **Table 1** on page 5, only thirteen out of the twenty participants tests had the same dominate leaning style as their teaching style. In other words, 65 % were able to successfully match up their learning and teaching styles.

It is noteworthy that those who did not match up in their particular styles had a much smaller difference between their dominate teaching style and their sub-dominate style or second highest score. An example of this is that one teacher scored a 74 as a **ST** learner, but scored a 45 as a **SF** teacher as her dominate style but a 42 as a **ST** teacher as her sub-dominate style. These two scores are very close together and could have gone the other way very easily. This was the case in each situation when the learning and teaching styles were not the highest of the two scores.

In answering the Research Question #3: Will the teachers of differing levels (grades) or subjects be concentrated in any one dominate learning or teaching style?

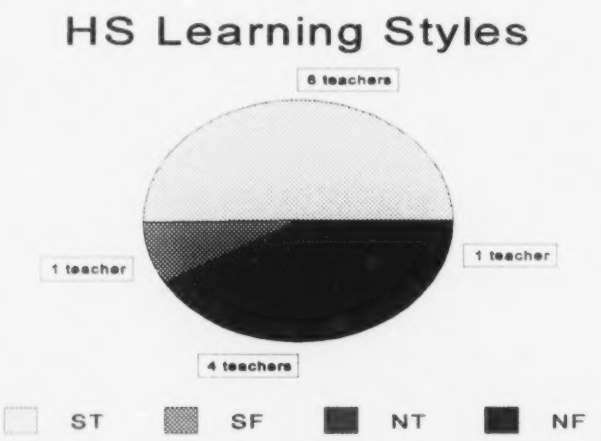
We need to take a look at the following graphs. The first graph will show the dominate teaching style among the high school teachers:



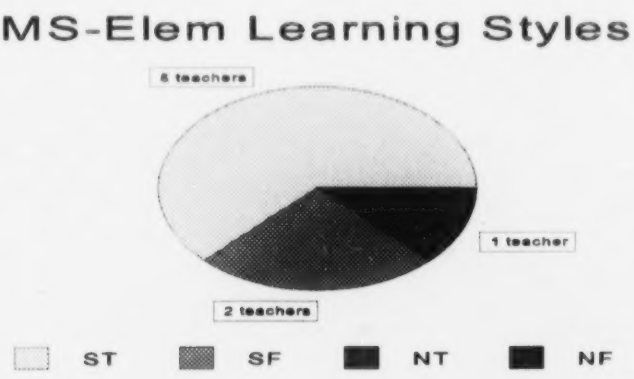


From these two graphs, we can conclude that the teaching style for the high school teaching staff who were participants in the inservice have dominance of ST teaching styles. On the other hand, at the middle school and elementary level, the semi-dominate style is SF.

In reference to learning styles, let us take a look at the following graphs:



The following graph shows the learning styles of the middle school and elementary inservice participants:



Therefore, the conclusion must be drawn that there is no significant trend toward any particular learning style simply because of grade level that is being taught. It is interesting to note that of the participants in the inservice, the majority were ST learners. However, there does seem to be a trend toward the majority of middle school and elementary school teachers being SF teachers and ST on the high school level.

In answering the Research Question #4, we must take a look at the response averages for the Post-Inservice Phone Survey. It is again interesting to note that no significant negative comments were noted from the twenty participants of the inservice. All of the scores were above a mark of 7.3 making the statements about learning and teaching styles all being quite important. Research Question #4 asks, Will the teachers recognize the importance of teaching to the different learning styles in their classrooms? Question #5 on the questionnaire states that, Teaching students different ways to adjust their preferred learning style will help them be more successful in my classroom, and Question #2, which states that Teaching to all four of the learning styles is a way to reach All students in my classroom, both scored very high in survey.

The conclusion can be made that the teachers do realize the importance that learning styles and teaching styles can make on the performance of the their students both individually and collectively. The need to have parental involvement is also of great concern to get the support of the parents in finding out their students strengths in learning.

Conclusion and Action Plan

Through this Collaborative Action Research Project, I have attempted to work with the people around me as friends, peers, co-workers, and fellow educators. I have attempted to introduce to them a concept that has excited me from the beginning of my master of arts program. The ideas of learning and teaching styles have given to me a rejuvenation in my teaching and lesson presentations. I have had a great desire to share this information with my colleagues.

In going back to my original problem statement of this project, I have helped many of my fellow workers understand that each of them has their own learning and teaching style and those styles may be different from some of those in their individual classrooms. I have helped them realize that many of them were already aware and could recognize their own styles. I helped many of them to understand ways that will make it easier for them to recognize these different learning styles in their students.

This experience has helped us all to begin to recognize that there are many unique situations and problems in our classrooms. There is a tremendous diversity among our students in the ways that they react to us as teachers and to their fellow students. Becoming aware that the very way that we are teaching may be a contributing factor in the unwanted behavior that we experience occasionally in our classrooms can be a key factor in our search for ways to reach all our students. I truly feel that this project has helped the participants recognize that this will help them be better teachers.

Conclusion and Action Plan (Cont)

Here are the conclusions that I have made in regard to learning and teaching styles and this collaborative project.

1.) Most teachers can recognize their own teaching styles

2.) Teachers are, many times, surprised by the outcome of the Learning Styles Inventories and the Teaching Styles Inventories. It is interesting to see their reactions when they learn their sub-dominate styles and how they need to incorporate all the different teaching styles to reach all the different learning styles that exist in their classrooms.

3.) It is interesting for the teachers to guess the learning and teaching styles of each other and to see how close they are able to get. It is very surprising how close and accurate that they can get.

4.) As we compared each others learning styles as we drew our individual profiles on the white board, it was interesting to note how similar many of our plots were to someone else in the group. Many times the difference was only very slight.

5.) When a teacher's learning style does not match up with their teaching style as also being dominate, there is a sub-dominate style (usually the same dominate learning style) which is very close to the dominate one. This would mean that the teacher has learned to adapt to their teaching environment and subject in order to better communicate what is being taught.

6.) There does not seem to be a pattern that certain learning and teaching styles tend to teach at certain grade levels. However, it does seem that more teachers teach at the SF level in middle school and elementary than in high school.

7.) All the participants saw the importance of teaching styles and learning styles and seemed to want to know more on the subject.

8.) Many of the teachers suggested that we continue to discuss and share ideas that will help each other to incorporate these ideas into their own teaching.

9.) It was a very successful and worthwhile inservice for the staff

Conclusion and Action Plan (Cont)

I have had the opportunity to share this project with the high school principal and he has expressed a good deal of interest and understanding in the area of learning and teaching styles. There is even a place on our year ending evaluation form that discusses how these styles are used in the classroom setting and what evidence there has been that the teachers have been incorporating them into their teaching. Because of this, and my understanding of these styles, he has asked me to teach another inservice on learning and teaching styles to the new, in-coming teachers and any other staff members that would be interested in knowing more about what they are being evaluated on. I will teach this inservice during the 3 days of teacher preparation inservice that we have every year before school begins in the fall. I will also give each participant the Learning and Teaching Style Inventories as well as discuss, in a little more detail, how this information can be used in the everyday classroom.

After this inservice, I have also been given the responsibility to mentor the new teachers in using various methods to teach to the various learning styles. I will be evaluating the teachers on their performance and continuing to help them to perfect the process of teaching "around the wheel". I will doing my administrative internship this coming school year which will also give me many opportunities to work with the entire staff on learning and teaching styles and how they will improve instruction and promote better learning.